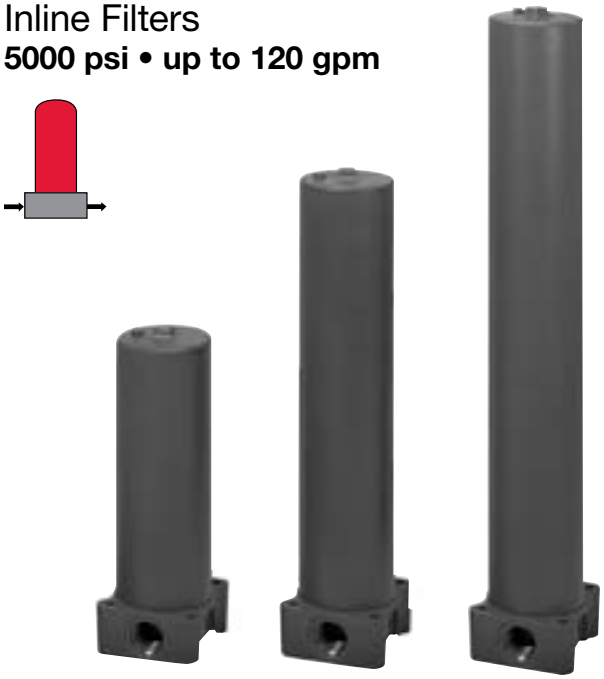
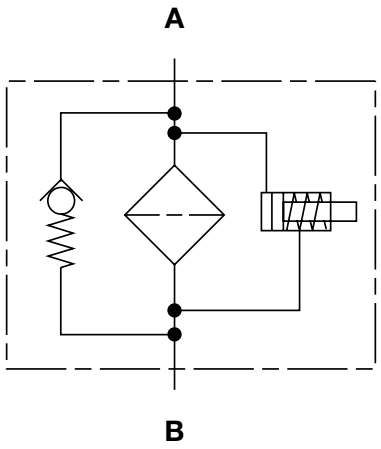
HF4P Series

Inline Filters

5000 psi • up to 120 gpm



Hydraulic Symbol



Features

- Meets HF4 automotive standard
- Non-welded housing design reduces stress concentrations and prevents fatigue failure.
- Inlet/Outlet port options include SAE straight thread O-ring boss, SAE flange code 62 and code 61 (optional) BSPP and subplate mounting to allow easy installation without costly adapters.
- O-ring seals are used to provide positive, reliable sealing. A choice of O-ring materials (nitrile rubber or fluorocarbon elastomer) provides compatibility with petroleum oils, synthetic fluids, water-glycols, oil/water emulsions, and high water based fluids.
- The element filter housing is permanently mounted above the filter head for easy top access and minimal clearance to remove elements for replacement.
- Clogging indicators are actuated by differential pressure and have no external dynamic seal. High reliability is achieved and magnetic indicator actuation eliminates a potential leak point.
- A poppet type bypass valve located in filter head base is mounted between the inlet and outlet port to provide positive sealing during normal operation and fast response during cold starts and flow surges.
- Fatigue pressure rating equals maximum allowable working pressure rating.

Applications

Technical Specifications

Mounting Method	4 mounting holes
Port Connection	SAE-24, 1 1/2" BSPP, 1 1/2" SAE Flange Code 61, 1 1/2" SAE Flange Code 62, Manifold Mount
Flow Direction	Inlet: Side Outlet: Side *(opposite each other)*
Construction Materials	
Head, Cap	Ductile iron
Housing	Steel
Flow Capacity	
9"	50 gpm (189 lpm)
18"	100 gpm (378 lpm)
27"	120 gpm (454 lpm)
Housing Pressure Rating	
Max. Allowable Working Pressure	5000 psi (345 bar)
Fatigue Pressure	5000 psi (345 bar) @ 1 million cycles
Burst Pressure	15,000 psi (1040 bar)
Element Collapse Pressure Rating	
BH	3045 psid (210 bar)
BN	145 psid (10 bar)
Fluid Temperature Range	14°F to 212°F (-10°C to 100°C) Consult HYDAC for applications operating below 14°F (-10°C)
Fluid Compatibility	Compatible with all hydrocarbon based, synthetic, water glycol, oil/water emulsion, and high water based fluids when the appropriate seals are selected.
Indicator Trip Pressure	ΔP = 29 psid (2 bar) -10% *(optional)* ΔP = 72 psid (5 bar) -10% *(standard)* ΔP = 116 psid (8 bar) -10% *(optional on non-bypass filters)*
Bypass Valve Cracking Pressure	ΔP = 43 psid (3 bar) +10% *(optional)* ΔP = 87 psid (6 bar) +10% *(standard)* Non Bypass Available

Model Code

HF4P BN 09 G 3 D 1 . 1 / 12 V B6 L115

Filter Type
HF4P = Inline pressure filter

Element Media
BH = Betamicron® *(High Collapse)* BN = Betamicron® *(Low Collapse)* W = Wire Mesh

Element Length
09 = 9 inches 18 = 18 inches 27 = 27 inches

Type of Connection
P = Manifold Mount G = Threaded In-Line F = Flanged

Filtration Rating *(microns)*
3, 5, 10, 20 = BH, BN 25, 50, 100, 200 = W

Type of Clogging Indicator
A, BM, C, D, J, J4 *(others available upon request)*

Type Code
1

Modification Number *(the latest version is always supplied)*

Port Configuration
(omit) = Manifold mount *(use when "P" connection type is selected)*
0 = 1 1/2" BSPP Straight Threads
12 = SAE-24 straight thread O-ring boss
16 = 1 1/2" SAE 4 bolt flange code 61 or 62

Seals
(omit) = Nitrile rubber (NBR) *(standard)* V = Fluorocarbon elastomer (FKM)

Bypass Valve
(omit) = Non-bypass – Critical applications *(high collapse element required)*
B3 = 43 psid (3 bar)
B6 = 87 psid (6 bar) Standard setting for pressure filters

Supplementary Details
W = "VD…" indicator modified with a brass piston for use with high water based emulsions/solutions (HFA) & (HFC)
L24, L48, L110, L220 = Lamp for D-type clogging indicator *(LXX, XX = voltage)*
T100 = Thermal lockout on indicator at 100°F *(C, D, J, and J4 indicators only)*
Code 61 = 4 Bolt Code 61 *(changes MAWP from 5000 PSI to 3000 PSI)*
cRUus = Electrical Indicator with underwriter's recognition

Replacement Element Model Code

5 . 03 . 09 D 03 BN / V

Length *(nominal inches)*
09, 18, 27

Filtration Rating *(micron)*
3, 5, 10, 20 = BN, BH
25, 50, 100, 200 = W

Element Media
BN, BH, W

Seals
(omit) = Nitrile rubber (NBR) *(standard)*
V = Fluorocarbon elastomer (FKM)

Clogging Indicator Model Code

VD 5 D . X / V

Indicator Prefix
VD = G 1/2 6000 psi

Trip Pressure
2 = 29 psid (2 bar) *(option)*
5 = 72 psid (5 bar) *(standard)*
Optional 15 psid (1 bar) & 116 psid (8 bar) available upon request

Type of Indicator
A = No indicator, plugged port
BM = Pop-up indicator *(manual reset)*
C = Electric switch - SPDT
D = Electric switch and LED light - SPDT
J = Electric switch *(Brad Harrison 5-pin mini connector)*
J4 = Electric switch - M12 *(Brad Harrison 4-pin micro connector)*

Modification Number

Supplementary Details

Seals
(omit) = Nitrile rubber (NBR) *(standard)*
V = Fluorocarbon elastomer (FKM)

Light Voltage *(D type indicators only)*
L24 = 24V L48 = 48V L110 = 110V L220 = 220V

Thermal Lockout *(VM, VD types C, D, J, and J4 only)*
T100 = Lockout below 100°F

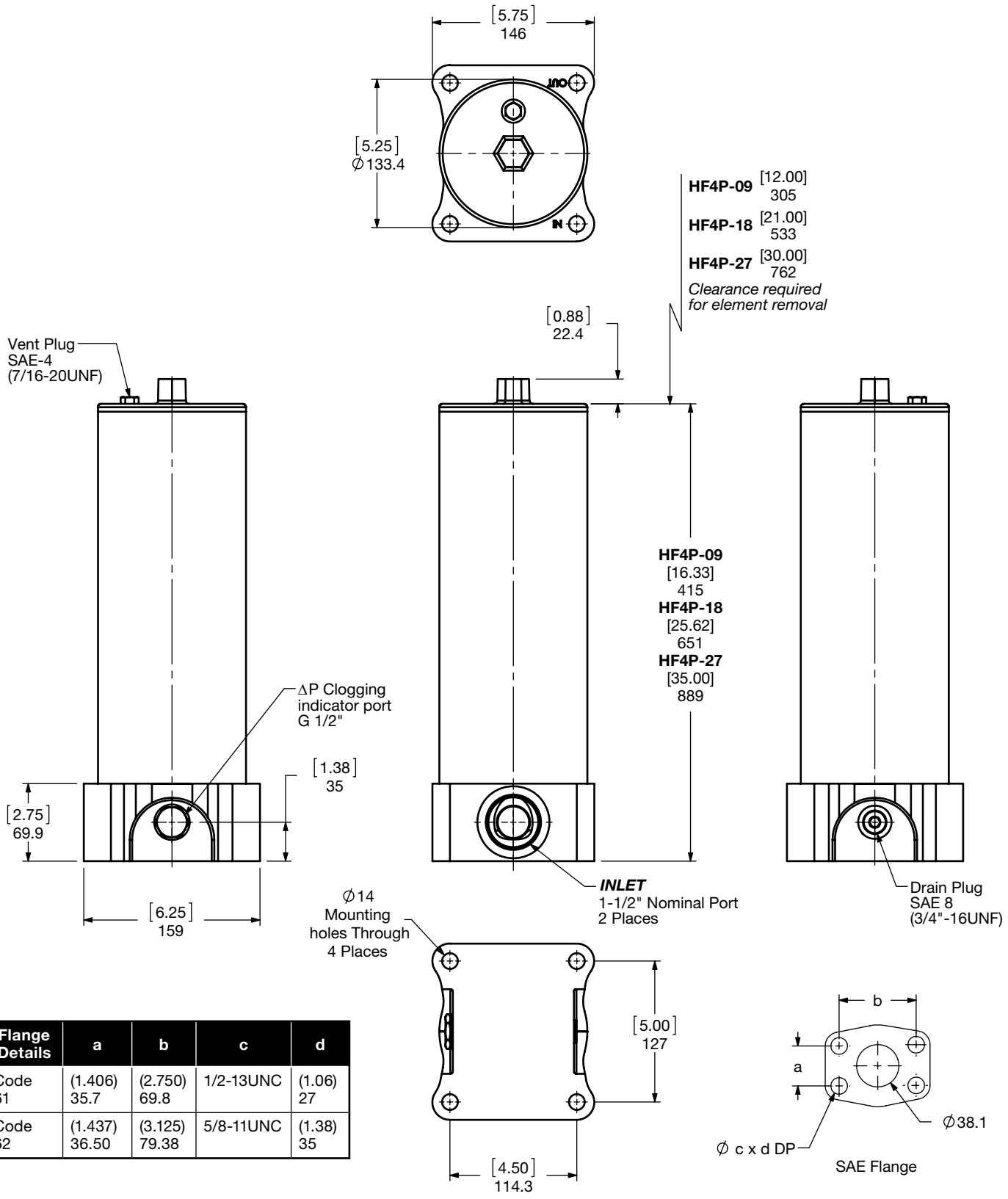
Underwriters Approval *(VM, VD types C, D, J, and J4 only)*
cRUus = Electrical Indicators with underwriter's recognition

W = "VD…" indicator modified with a brass piston for use with high water based emulsions/solutions (HFA) & (HFC)

(For additional details and options, see Section H - Clogging Indicators.)

Model Codes Containing RED are non-stock items — Minimum quantities may apply – Contact HYDAC for information and availability

Dimensions
HF4P Inline



Flange Details	a	b	c	d
Code 61	(1.406) 35.7	(2.750) 69.8	1/2-13UNC	(1.06) 27
Code 62	(1.437) 36.50	(3.125) 79.38	5/8-11UNC	(1.38) 35

Size	09	18	27
Weight (lbs.)	69.9	98.4	132.8

Dimensions shown are [inches] millimeters for general information and overall envelope size only. Weights listed include element.
For complete dimensions please contact HYDAC to request a certified print.

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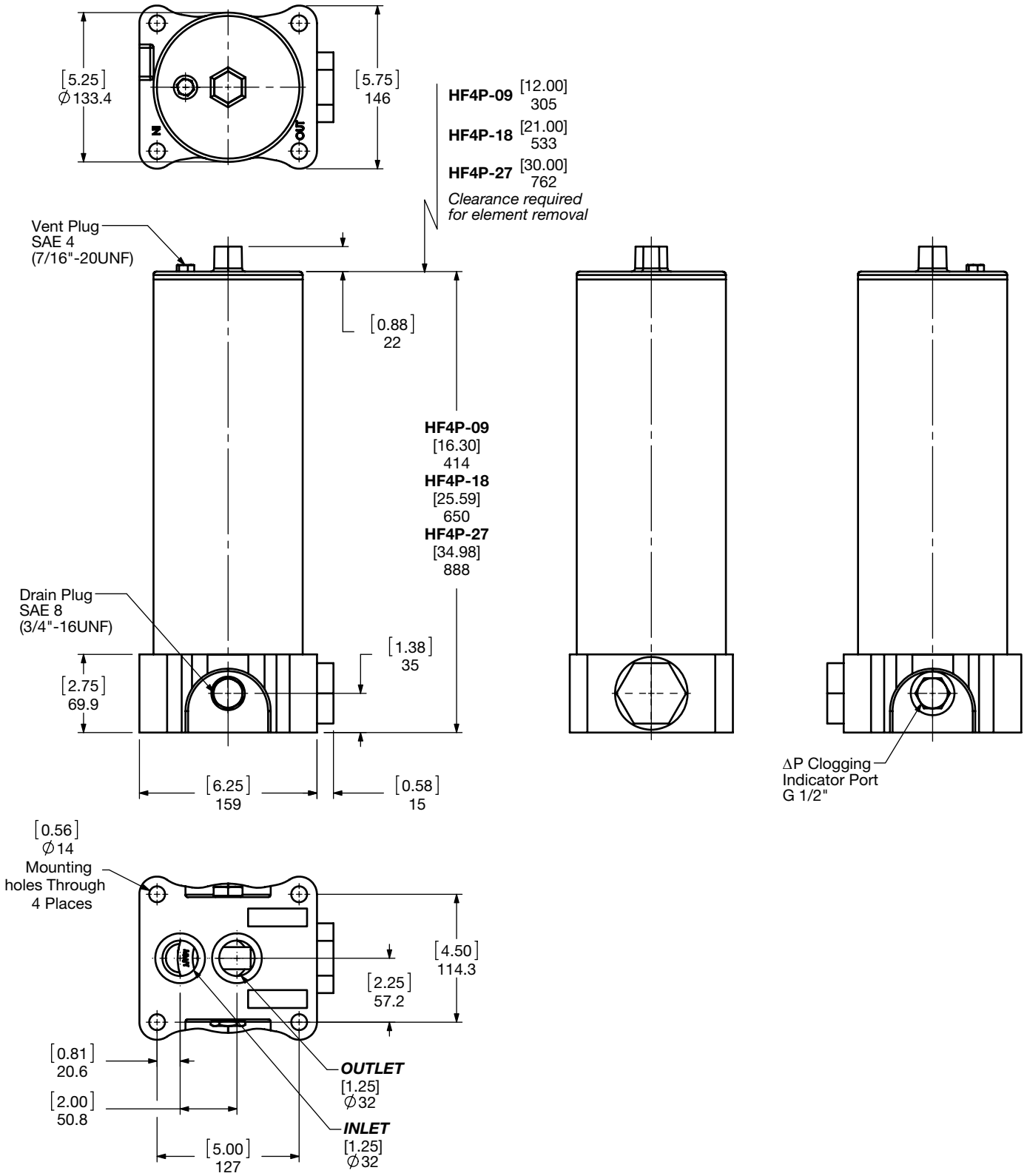
Dimensions
HF4P Manifold



Size	09	18	27
Weight (lbs.)	71.7	100.2	134.6

Dimensions shown are [inches] millimeters for general information and overall envelope size only. Weights listed include element.
For complete dimensions please contact HYDAC to request a certified print.

Sizing Information

Total pressure loss through the filter is as follows:

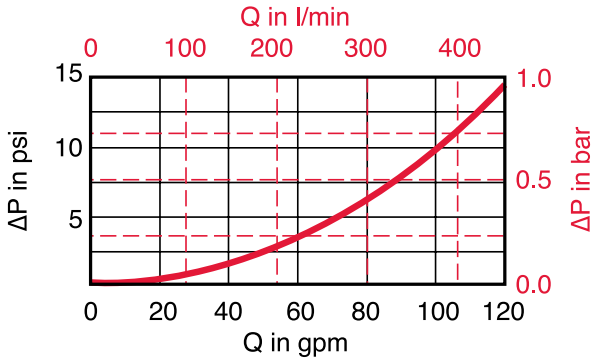
Assembly ΔP = Housing ΔP + Element ΔP

Housing Curve:

Pressure loss through housing is as follows:

$$\text{Housing } \Delta P = \text{Housing Curve } \Delta P \times \frac{\text{Actual Specific Gravity}}{0.86}$$

Adjustments must be made for viscosity & specific gravity of the fluid to be used! *(see "Sizing HYDAC Filter Assemblies" in Section B - Overview)*



Element K Factors

$$\Delta P \text{ Elements} = \underset{\text{(From Tables Below)}}{\text{Elements (K) Flow Factor}} \times \text{Flow Rate (gpm)} \times \frac{\text{Actual Viscosity (SUS)}}{141 \text{ SUS}} \times \frac{\text{Actual Specific Gravity}}{0.86}$$

Autospec HF4 Depth	5.03.XXDXXBN (Low Collapse)			
Size	3 µm	5 µm	10 µm	20 µm
5.03.09DXXBN	0.168	0.141	0.079	0.044
5.03.18DXXBN	0.080	0.067	0.038	0.021
5.03.27DXXBN	0.052	0.043	0.024	0.014

Autospec HF4 Depth	5.03.XXDXXBH (High Collapse)			
Size	3 µm	5 µm	10 µm	20 µm
5.03.09DXXBH	0.207	0.146	0.089	0.047
5.03.18DXXBH	0.097	0.068	0.041	0.022
5.03.27DXXBH	0.063	0.044	0.027	0.014

Autospec HF4 Wire Mesh	5.03.XXDXXW
Size	25, 50, 100, 200 µm
5.03.09DXXW	0.007
5.03.18DXXW	0.004
5.03.27DXXW	0.002

All Element K Factors in psi / gpm.

Notes